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Proto-Mixe-Zoquean: A Case in Linguistic and Cultural Reconstruction*

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1. Introduction

The Mixe-Zoquean (MZ)[1] family constitutes a group of Mesoamerican languages and dialects found in the isthmus of Mexico. Based on the reconstruction of the "ancestor" of the languages in this family, a protolanguage is hypothesized, from which a linguistic paleontological study can be made. In turn, hypotheses can be drawn about the culture of which the language was a part, including a possible dating of the language. Based on Kaufman's (1963) reconstruction of proto-Mixe-Zoquean (PMZ), Campbell and Kaufman (1976) had hypothesized that the Olmecs of southern Mexico were speakers of Mixe-Zoquean languages and dated PMZ to 1500 BCE through glottochronology, a method which is controversial (Bergsland, Vogt, and Akhmanova 1962). They based their hypothesis in part on the geographical congruence of known Olmec sites and current MZ languages. The stronger part of their evidence consists of approximately 50 borrowed apparently Mixe-Zoquean roots among other language families in the area, in conjunction with what they called "the rather sophisticated Mesoamerican culture" represented by the reconstructed etyma for PMZ.

> If a culture must have such items to qualify as Mesoamerican and the terms for the items are borrowed from MZ, then it would seem reasonable

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[1] Abbreviations for languages used in this paper are: PMZ – proto-Mixe-Zoquean, PM – proto-Mixean, PZ – proto-Zoquean, POM – proto-Oaxacan Mixe, PGZ – proto-Gulf Zoque.

> to assume that speakers of the MZ languages possessed the uniquely Mesoamerican things early enough and had prestige enough that others borrowed from them. (Campbell & Kaufman p. 82)

Of that reconstruction, only the terms for 'write', 'divination', 'nagualism', and the vigesimal numbering system appear to be based purely on linguistic evidence.

In this paper, I examine Wichmann's (1995) reconstruction of PMZ and offspring languages to illustrate two general areas. First, I compare those etyma representing terms of material culture with available archaeological evidence and theory to determine on that basis the soundness of their inclusion in PMZ using the 1500 BCE date as a reference point, including relevant etyma from reconstructed offspring languages to account for the apparent lack of terms which might be expected to appear in a cultural reconstruction. I then consider three methodological aspects of culturally accurate reconstruction. I examine some meanings within the historical context of the area first to make the point that current ubiquity of an item or its meaning is not a sufficient condition for its inclusion in a reconstruction, and then to demonstrate the efficacy of historical knowledge of a culture by dating Proto-Oaxacan Mixe (POM) as a post-Conquest language stage based on the number of Spanish material items represented in the etyma. I present evidence for the necessity of a knowledge of the ethnology of the current cultures from which the synchronic data are drawn. Last, I offer data which point to the need for accurate translation from intermediary languages and examine possible sources of difficulty therein. I conclude that a linguistic reconstruction will ultimately be accurate only after the consideration of all of these factors.

2. The Archaeology

I begin the archaeological aspect with a discussion of general terms relating to subsistence in hunter/gatherer cultures, with emphasis on the ubiquity of the items in Mesoamerica at the time indicated, then move through items related to sedentary patterns, such as agriculture and more sophisticated technology.

The Olmec heartland is in the lowland areas of Veracruz and Tabasco, Mexico. With an ecology rich in plant and animal resources, this area has been shown to be one of the earliest sites for the existence of settlements, both seasonal and permanent, due in large part to the variety and availability of subsistence necessities.

In a study of animal protein sources by Wing (1978) of five sites in the Olmec heartland that date to the earliest Olmec-type settlements, skeletal remains found there correspond with the relevant PMZ etyma in Wichmann, shown in Table 1. Wing (1981) lists conch, snook (still a popular gamefish), turtle and iguana in the remains found at five Early Formative sites in the pre-Olmec region. She estimates that 58% of all animal protein was from snook and turtle (p. 25) and speculates on differences in fishing methods to explain the differences in the relative amounts of snook found in pre-Mayan vs. pre-Olmec areas. Wichmann has reconstructed two types of fishing in PMZ: 'fish

with a net' (also 'wash nixtamal (leached corn)') and 'fish with a hook', which also means 'sew' not only in PMZ but in both current Jaltepec and San Juan Guichicovi Mixe.

PMZ Reflexes			
alligator	*?usnin	conch	*sa:ka
crab	*?e:si	crayfish	*cas(i)
iguana	*ti:ciC	iguana	*to:ki
shrimp	*?o:yo(?)	snook	*(h)a(?)y(aw)
to fish with a net	*ma:k?	to fish with hook	*suy
tortoise, turtle	*tuka		

Table 1: Aquatic Animal Protein Sources

The heartland region was also rich in game as reflected in Table 2. The PMZ forms for 'shoot with a bow' and 'shoot with a slingshot' are indicative of hunting techniques, but Wing (1978) estimates that dogs provided 64% of the non-aquatic meat at San Lorenzo. Dogs were domesticated in Mesoamerica by around 3,000 BCE (Adams 1991: 37), and remained the only domesticated animal until around 300 CE, when turkeys were domesticated (Coe, in Campbell & Kaufman). Wing (1981) found evidence of socially stratified usage of turkey at San Lorenzo. Lyle Campbell (personal communication (p.c.)) notes that many Mesoamerican languages borrowed the word for turkey from a root something like **tul*, of indeterminate origin, which accounts for a lack of a PMZ reflex, since none of the MZ languages have /l/. Wichmann, however, offers two reflexes which are /l/ initial: PMZ **liklik* 'American kestrel' and POM **le(:)k(y)* 'baby'. Deer, for which Kaufman reconstructed PMZ **məʔa*, was quantitatively second to dog in the terrestrial animal protein hierarchy. The differences between PM and PZ reflexes for 'deer', 'opossum', and 'paca' must have some significance. This pattern of difference will be repeated throughout the data.

PMZ Reflexes			
agouti	*?uku	armadillo	*ni:c
black-bellied tree duck	*pi:?sisi	dog	*taka
iguana	*ticiC	iguana	*to:ki
monkey	*ca:wi	partridge	*wonon
rabbit	*koya	shoot with sling, to	*ti:?p
shoot with bow, to	*tip	tapir	*cu:ci(-ka:haw)
PM Reflexes		*PZ Reflexes*	
deer	*haycu	←[2]	*miʔah
mexican opossum	*po:	←	*cihi
paca (capybara)	*yukho?	←	*huhnivi
turkey	*tu:tuk	←	*tuʔnuk, *kaʔncyi
agouti	*keki	dove	*kuʔkuʔ
brocket deer	*ši:ti		
peccary	*ʔi:cimi		
set a trap, to	*nak		
slingshot	*tuh-an		

Table 2: Terrestrial Animal Protein Sources

[2] Same as PM gloss.

While animal protein was vital, there was also a wide variety of important undomesticated plants for harvesting and use in Mesoamerica and the Olmec area. These are listed in Table 3. 'Sweetsop' is probably derived from a common PMZ root, but the differences in 'chicle', 'rubber (tree)' and 'century plant' certainly point to different origins.

PMZ Reflexes			
acorn	*soh-tim	bamboo	*kape
cedar	*ma:san-kuy	chili, type of	*kuy-ni:wi
cigarette (see below)	*huk?-i	fruit, plum-like	*tu:ni
cotton tree (see gourd)	*pokok	[tree cotton tree][3]	[*pistin]
edible green	*camam	edible green (generic)	*cip?V
tree with edible leguminous fruit	*?i:?(n)ki	guava	*pos, posos, pohos
gourd tree	*cima-kuhy	honey	*ci:nu
hogplum tree	*ham(ay)-kuy	reed	*?o:kwin
palm (edible types)	*kuma		
PM Reflexes		*PZ Reflexes*	
century plant (agave type)	*ca:he	←	*?oho
chicle	*ci?m-pak	←	*hi?ya
rubber (tree)	*?o:me	←	*na?h
sweet apple {sweetsop}	*?a:ti	←	*yati
canna, {arrowroot}	*wayi-?ay	purslane	*pecV-pecV
edible piper	*wa:w		
grape (wild)	*cay-tim		
pickle tree	*tuš		
ramon breadnut tree	*moho		
soursop	*katuc-?a:ti		
sweet potato {palm with tuber}	*pa?ak-miny		
type of palm	*nuhn		
wild sugar cane	*pa:-wa:šuk		

Table 3: Wild Plant Resources

Many of the cultivars given in Table 4 are listed in MacNeish (1992: 87-8). His timeline has all of these domesticated by the time of the Olmec horizon. Lee (1989: 221-2) speculates that cacao may have been domesticated in the Olmec region, and that its trade was monopolized between 1200-900 BCE. MacNeish lists sapotes (a fruit) as domesticated in the highland area of Teotihuacan by 2300 BCE, and reports that chilies, gourds and pumpkins were already cultivated by seasonal foragers by 4000 BCE. By 1800 BCE, common beans, corn, squash, avocado, cotton, and sunflowers had been domesticated. Tobacco was not included in MacNeish's list, but Campbell (p.c.) points out that reconstructions for something like 'cigarette' or 'tobacco' are common in other Mesoamerican languages, such as Mayan, and Schoenhals (1988) lists species of wild

[3] Alternate or conflicting glosses are as follows: [ ] from Campbell (p.c.), < > glosses in Wichmann for synchronic forms, { } from Schoenhals (1988).

Nicotiana which may have been used. The existence of phonetically different reflexes in PZ and PM probably accounts for the lack of PMZ reflexes for 'pumpkin' and 'maguey' (century plant). The case with 'string bean' differs in that both reflexes share the common 'bean' root ***sik*.** On the bases of the importance of the maguey for both fiber and *pulque*, a fermented beverage, and the fact that it is easily transplanted or planted (judging from personal experience), I am assuming that it was cultivated at that time.

PMZ Reflexes			
avocado	*kúy-tim	bean	*sik
bean, white	*po:p?o?-sik	cacao	*kakawa
chili pepper	*ni:wi	chili pepper, white	*po:p?o? ni:wi
cigarette <thing smoked>	*huk?-i	to smoke	*huk?
gourd	*pok(ok)[pokok]	peanut	*nas-kakawa
type of sweet potato	*min(i)		
PM Reflexes		*PZ Reflexes*	
pumpkin, calabash	*ci?wa	←	*pasoŋ
squash type	*?ehkšah	←	*?apit-pasoŋ
string bean	*kuy-sihk	←	*yawa-sik
black sapote	*cu:?kV	cotton	*coha
sugar cane	*wa:šuk	tomato	*koya
roll of leaf or tobacco <or grass>	*ša:?c-e(k)		

Table 4: Cultivars

Table 5 lists terms used in the corn complex, another aspect of the sophistication of culture. Corn was domesticated by 3000 BCE and the fact that there are three terms for maize referring to different states (generic, shelled, and leached), and two kinds of grinding (dependent on the state of the corn, namely dry or leached), none of which are compounds, seems to point to a long pre-PMZ history. This may be contrasted with the POM term for 'metate roller', an obvious compound. The absence of a PMZ reflex for 'metate' must be due to linguistic difficulties, since Lowe (1989) dates footed metates to pre-Olmec times, and MacNeish (1981) dates less complex metates to 3000 BCE. The reflex for 'lime' ***ham*** is probably indicative of an ash-based leaching agent for maize. Campbell (p.c.) notes that 'ashes' ***kuy-ham*** combines that root with 'wood/stick'. This can be contrasted with a mineral source of lime, created by baking limestone, which may be the meaning of PM ***?akaš*.** 'Dough' and 'ear of corn' again point to different origins for the PM and PZ reflexes.

PMZ Reflexes			
corncob	*hi:pak	cornfield	*kama, mo:k-kama
granary for maize	*ce?s	knead (dough)	*mi:k?, yo:?t
ashes	*kuy-ham	lime	*ham
leached cornmeal {corn}	*pic-i	maize	*mo:k
shell corn, to	*?iks	shelled corn	*?iks-i
to grind	*way	to grind dough	*ho:?s
to grind pinol	*ki:?t	tortillas, to make	
tortilla, food	*?an-e	to work with sieve or net	*ma:k
PM Reflexes		*PZ Reflexes*	
dough	*hic-i	←	*ki?t-i
ear of corn	*mo:k-kohk	←	*cutu
corn drink	*šu:t(Vk)	corn leaf	*mok(o)-?ay
eat bread, tortillas	*kay		
esale	*mu:š(ik)		
griddle	*wekši		
lime	*?akaš		
metate	*pa:w-an		
sowing stick	*ni:p-an		

Table 5: Corn Terminology

The rest of the agricultural complex is represented in Table 6. These PMZ reflexes are all to be expected for a culture characterized by Campbell & Kaufman as "slash and burn agriculturalists", except for the term for 'irrigate'. This appears to be a misglossing over-extended from current reflexes for 'pour liquid on, water something, turn upside down' and clashes with the archaeological evidence that dates the first Mesoamerican irrigation work starting around 800 BCE, according to Adams (1984: 110-11). This can be tied semantically to the term for 'stone railing', in Table 8, which is discussed later.

PMZ Reflexes			
to clear underbrush	*yu:h	field cleared of underbrush	*yuh?-i
bowl made from gourd	*cima	to harvest	*pi:?k
grind chili	*mo?c	seed	*puh
to sow	*ni:p?	sowing time; sown field	*ni:p?-i
to turn upside down; break; irrigate< sprinkle, spread out, water something >	*muc	to yield a crop	*ci:?

Table 6: Agricultural Terms

A probable byproduct of extensive agriculture is permanent settlements. From the lack of relevant terms in PMZ in Table 7, it's possible that many terms were borrowed in later languages or that the process was just beginning. The making of adobe bricks is much more an act of planned permanence than the construction of wattle and daub houses, which were being built by 1500 BCE in the highlands near Teotihuacan by later developing agriculturalists, and the use of clay as a building material for floors dates back

to 2300 BCE (MacNeish 1992: 112). The earliest house floors preceded those by 600 years (Adams p. 37). "Sweep' is certainly a concept pertinent to settlement, and reflexes for 'broom' in PM and PZ differ significantly only in their suffixes, *-*an* (deverbalizer) and *-*kuy* ('stick') respectively. The reflexes for 'basket', 'door' and 'mat' in PZ and PM are sufficiently different to indicate different origins, although Kaufman reconstructs **pata* for PMZ. Basketmaking dates to at least 5000 BCE (MacNeish 1992:108). Reflexes for 'pitcher' in PZ and PM are literally "water-carrying instrument", with the same suffixal differences as 'broom'. Adams (p. 47) suggests that the Olmecs may have been responsible for the spread of Ocos type pottery (horizon 1500 BCE), which was the first to reach most of Mesoamerica. The fact that it was so specialized makes it possible that there were craftsmen who did nothing else, according to Coe and Lowe (Adams p. 48), a type of labor differentiation possible only with the surpluses available from settled agriculturalists. I have included it in this category also because the inherent fragility of ceramics makes safe transport difficult, making it an indicator of a sedentary lifestyle.

PMZ Reflexes			
adobe (mud) bricks, make	*mu:?c	hearth	*?alwa?n
house	*tik	house pole	*kom(om)
to carry water	*mah	to sweep	*pe:t?
PM Reflexes		*PZ Reflexes*	
basket	*ka?ka	←	*waka
broom	*pe:ht-an	←	*pet-kuy
door	*tik-?ahw-kV	←	*?aŋ-kɨy
mat	*to?k-i	←	*pata
pitcher	*mah-an	←	*mah-kuy
attic	*kuy-win		
shelf	*mo?co-komom		
wall	*me:?š-i, poc-e		

Table 7: Settlement Terms

We can now consider terms of non-agricultural technology, listed in Table 8. This aspect of Olmec culture is in some ways the most difficult to adequately discuss in terms of the glosses presented by Wichmann. I begin with those reflexes which can be properly ascribed to Olmec culture of the time frame hypothesized by Campbell & Kaufman. Agave fiber was in use by 5000 BCE, and weaving was done by 3000 BCE, by which time cotton was in use in thread (MacNeish 1981). Canoes had been in use since 7500 BCE, according to MacNeish, Wilkerson, and Nelken-Turner (Adams, p. 39).

However, many of these terms are not synchronic with pre-Olmec and Early Olmec evidence. Although textiles were used, evidence from the earliest sculptural and figurine representations of 350 years later suggests that 'shirt' is an overgeneralization of upper body clothing, and that 'cape' would be more culturally accurate, according to Lowe (1989: 47), who also calls footwear "rare and late" in Olmec evidence, placing it around 300 BCE and later. It must be noted, however, that soil conditions in the Olmec heartland are such that only the most durable materials such as stone and bone survive the damp. The words for 'paper' in many of the current languages from which Wichmann's

data were drawn are glossed in Spanish as *amate*, a species of *ficus*, the bark or inner bark of which may have been used as a surface for drawing. Wichmann doesn't reconstruct anything for 'draw', and the semantic overlap in PZ of 'work' as handicraft or drawing' makes it seem likely that PMZ 'write' is functionally (and anachronistically) related to 'paper'.

One item reflecting more durable evidence is 'stone railing'. According to the Spanish glosses given by Wichmann for 'stone railing' **me(?)ke*, one of which means 'low wall', another of which means 'dike', this could be reconstructed as 'dam', which would coincide with the previously mentioned 'irrigation'. Although these would not fit the time frame postulated by Campbell & Kaufman, if the time frame is later (the 800 BCE date given by Adams for irrigation), these two terms could fit the culture. The other term regarding what would be the most durable evidence is 'make a stone wall'. Campbell (p.c.) points out that a stone wall can be something as simple as piled stones around the edge of a field. The evidence suggests that, for the time period under consideration, this is all it may have been, since the earliest known stonework delineation of public space, consisting of unworked stone borders, date to 1350 BCE. Lowe (p. 47) puts the earliest date of dressed architectural stone at around 900 BCE, which applies to the apparently misglossed 'stone railing', as well. There is apparently some difference between PMZ 'rope' and the PZ and PM 'rope' reflexes, which afford such a close match.

PMZ Reflexes

agave fiber	*nawin	canoe	*?aha
carpenter [woodpecker]	*cehe	coal	*hu?yi
cut with machete	*po:?t	paper	*noki
rope	*cay	sandal "limb leather"	*ki?- ?ak
shirt	*suy-i	stone railing < parapet, dam, dike >	*me(?)ke
stone wall, to make a	*ne?w	thread	*pi:?t-i
to chisel	*pa:h?	to cut with scissors	*me?ps
to spin thread	*pi:?t	to weave	*ta:k?
to write	*ha:y?	writing instrument	*ha:y?kuy

PM Reflexes		*PZ Reflexes*	
rope	*tipš-i	←	*ti?ps-I
axe	*puš-an	blanket	*nu?s-kuy
candle	*tikš-pa	drunk	*mu:k-(hu)-pa
cut with knife	*cuk	majagua (tree used for bark rope)	*po?wah
knife	*cuk-an	native blouse	*?asa
saw	*hi;?t-an	pot	*suyu
to plane	*še:?w	skirt	*te?ksi
		white cotton trousers	*tukši
		work; handicraft, drawing	*cik-i

Table 8: Terms of material technology

Another aspect of specialization is the development of higher economic sophistication. Given the early trade mentioned in the corn complex, the possible monopolization of cacao trade, and the spread of Ocos type pottery, the PMZ reflexes in Table 9 seem justified.

PMZ Reflexes			
to buy	*huy	expensive < valuable >	*cow-ah
to pay, to owe	*yoh	road	*tu:?-?aw
to sell	*ma?ay		
PZ Reflexes			
to give credit	*ha?c-ci	village	*kumkuy

Table 9: Economic Terms

MacNeish (1981: 73) divides Mesoamerica into two distinct cultural developments, with the lowland Olmec heartland moving toward a theocracy, and the upland culture becoming a more secular culture. He gives the time frame for this split as occurring after 900 BCE. The reflexes in Table 10 are for PMZ and its daughters PM and PZ. None of the reflexes are synchronic mismatches to the Olmec era. MacNeish cites examples of apparent human sacrifice as early as 5000 BCE (p. 69) and postulates a "complex religious life" in the period of village agriculturalists beginning in 1500 BCE for upland Mesoamericans (p. 72). This is only slightly later than similar developments in the Olmec heartland. Thus we would expect to find the kinds of PMZ reflexes in Table 10 consisting of a complex involving incense, music, dance, and festival. Even the PM and PZ etyma are all reasonable within the framework of the Olmecs; conversely, all of the PMZ reflexes are reasonable for a much less sophisticated culture.

PMZ Reflexes			
copal incense	*po:m(o)	dance	*?ec-e
dancer	*?ec-pa	drum	*kowa
festival, name, sun	*siw	manna	*ma:san
necklace	*nam-cim(-i)	pray	*ko-nu:ks
remedy	*coy	ring	*ki?-kuma
shaman	*cok?a	to dance	*?ec
to play a wind instrument	*su:s?	to practice witchcraft	*pok
PM Reflexes		*PZ Reflexes*	
formed clay object	*mik-i	baptize	*niy-?iy
horn (musical)	*šu:š-an	celebrate	*si?ŋa?
sacred language	*?a-ma:san	flute	*sus-kuy
to divine	*?a-koc		

Table 10: Ritual Terminology

We can see from the archaeological evidence that, for the greatest part, the linguistic reconstruction matches the material culture reconstruction, with certain, perhaps inevitable, gaps from a multiplicity of causes. These include lack of evidence due to the nature of the environment, in this case damp acidic soil which destroys all but the most impervious materials; the time depth involved; and in terms of dating, the

crucial vocabulary that exemplifies the cusp of a major cultural change, namely that from village to urban society, which might be expected to be lost with the changes in culture in the language family since that time. The more that indicators of cultural sophistication are involved, the less surely the archaeological evidence matches the linguistic reconstruction. Those elements which are indicators of an urban culture have to do with the organization of the society and labor. Of the PMZ terms, only two imply the kind of community effort an urbanized society would exhibit: **muc* 'irrigate' and **me(?)ke* 'stone railing' per Wichmann; 'parapet, dam, dike' per his Spanish glosses. The discussion above for these terms shows that if they are to be included in PMZ, the date must be later than 1500 BCE.

3. Methodological Issues

I would now like to briefly examine three prerequisites of linguistic reconstruction that are also pertinent to cultural reconstruction.

3.1 Knowledge of History

The first of these is a knowledge of the history of the area of the protolanguage (s) involved. Table 11 illustrates the necessity for this. Pigs and chickens are European imports to the Americas. The peccary is related to the pig, and the reconstruction of the PGZ reflex **mok-yo:ya* 'peccary' (literally "corn pig") and PZ **yo:ya* 'pig', is probably due to a reversal in post-Conquest cultural salience as the pig became the more familiar of the two and the peccary became more of a nocturnal cornfield predator than a meat source. Wichmann bases the PMZ form for 'chicken' on the root **ceweE* 'to prick'; however, he does call the set of proto-reflexes "speculative" (p. 276). PM **me:nyu* 'money' is based on the Spanish word *medio/media* 'half a *real*' which Campbell (p.c.) characterizes as "the almost ubiquitous Spanish loan in Latin American languages".

English Gloss	*Spanish Gloss*	*Proto-Reflex*	*PLang*
chicken, hen (m)[4]	pollo, gallina	*ce:wE(kV)	PMZ
money (l)	dinero	*me:nyu	PM
pig (m)	cerdo, marrano	*yo:yah	PZ
peccary, javelina	jabalí	*mok-yo:ya	PGZ

Table 11: *Spanish material culture (m) and linguistic (l) loans

The strongest evidence for dating any of Wichmann's protolanguages is given for POM by the consideration of areal history. Table 12 lists those reflexes which strongly identify POM as post-Conquest, and two which indicate less surely that PGZ may have been. The presence of such items as 'sweat blanket for mount' **hipaʔaɲ* and 'beast of burden' **hiyuk* presupposes either an unattested use of domesticated deer, or post-Conquest word formation. The semantics of PGZ 'peccary', previously discussed, point to a post-Conquest origin. There are no citrus species native to the Americas, and Wichmann notes that in 'lime'(the fruit) **cahp-pos* ,**cahp* 'sky' is the usual first member

[4] The abbreviations here are (m) material culture, (l) linguistic loan, # included for the comparison of semantics only.

in nouns referring to objects associated with the Spanish. The other morpheme **pos* means 'guava'. 'Soap' is indeterminate in that it may refer to a kind of soaproot, rather than European soap. Mirrors were made by the Olmecs, but of hematite or magnetite, and apparently for religious or status purposes (Heizer & Gullberg, and Carlson 1981), and were not associated with glass, which was another import. 'Mescal', a distilled and therefore European product of *pulque*, unsurprisingly is literally "fire-water".

English Gloss	*Spanish Gloss*	*Proto-Reflex*	*PLang*
beast of burden	bestia de cargo	*hiyuk	POM
carpenter's plane	cepillo	*še:ʔw-n	POM
cock, rooster	gallo	*naʔaw-ce:wy	POM
cat	gato	*ci:ti	POM
fence	cercar	*kem	POM
glass, mirror	vidrio, espejo	*hiš-n	POM
glasses	anteojos	*win-ʔhis.-n	POM
lime (fruit)	limón	*cahp-pos	POM
key	llave	*ʔa-wa:hc-n	POM
match	cerilla, fosforo	*tack tiʔin-y	POM
mason	albañil	*pohc-pa	POM
mescal	mezcal	*hok-ni:ʔ	POM
peccary	jabalí	*mok-yo:ya	PGZ
saddle blanket	sudadero	*hipaʔan	POM
scissors	tijeras	*meʔpš-n	POM
small mill	trapiche	*wi:ʔt-n	POM
soap [soaproot?]	jabón	*sic	POM
sugar	azúcar	*poːʔp paʔahk	POM

Table 12: POM and PGZ Post-Conquest forms

Thus we can see that for POM, the ethnohistory of the area firmly dates it as post-Conquest. However, it is also possible that these terms represent a natural dispersion, due to geographic proximity, of word formations that happened shortly after the arrival of the Spanish, and as such are a distinct development that occurred independently of the divergence of POM from the other Mixean language. It might be possible to fix the time period more closely by looking at loans from Spanish, but that would involve a different analysis beyond the scope of this paper.

3.2 Knowledge of Current Ethnology

The second methodological prerequisite is that of having an ethnological knowledge of the current cultures from which synchronic linguistic data are drawn. Wichmann's reconstruction of PMZ uses data from 39 languages collected from 18 sources. The large number of sources can be problematical in that the elicitor's knowledge of colloquial usage by informants in the eliciting language (Spanish) is not necessarily shared by the reconstructor. Table 12 lists glosses which are ethnologically inaccurate to varying degrees. Of them, the most misleading is 'carpenter'. If PMZ **cehe* were to be taken as 'carpenter' rather than 'woodpecker' (from the Spanish gloss *carpintero*), this would

suggest a labor specialization which may in fact have existed but cannot be reconstructed linguistically.

Wichmann gloss	*Alternate gloss*[5]	*Proto-Reflex*	*PLang*
bamboo	[reeds]	*kape	PMZ
avocado	{laurel type tree, per *aguacatillo*}	*šihc	POM
carpenter	[woodpecker]	*cehe	PMZ
cotton tree	{*ceiba* per *pongolote*}	*pokok	PMZ
grindstone	[gizzard (crop) stone]	*me:ʔc	POM
ground cherry	[miltomate, husked tomato]	*cap-koʔon	POM
iron, metal	[hard metal (not gold)]	*tiʔŋ-kuy	PZ
marmalade fruit	<mamey> {red sapote, Sp. gloss}	*kaʔwak	PM
pea	[pea-shaped seed] {tree of the "pea" family, per *chipilcoite*}	*cus-kuy	PMZ
sweet potato	{palm with edible tuber, per *camotillo*}	*paʔak-miny	PM
yucca	[sweet manioc]	*pisi	PMZ
yam type	[fish poison]	*naku	PZ

Table 12: Ethnologically inappropriate glosses

3.3 Accurate Translation

The third prerequisite is the necessity of using a fluent translation of glosses from intermediary sources (in this case Spanish) to avoid either a mistaken sense of the general aspect of the word or to avoid a possibly anachronistic interpretation to result. For instance, the PZ reflex **tiʔŋ-kuy*, if glossed as 'iron' when what is meant is "hard metal", which Campbell cites as the rural meaning of Spanish *fierro*, would be anachronistic, since iron is another European import. John Justeson (p.c.) points out that *tiʔŋ* means 'to cut', making **tiʔŋ-kuy* 'thing that cuts' in current Mixean languages, which is different from the 'bell; metal' meanings given for current Gulf Zoquean forms by Wichmann.

Table 13 lists other glosses that apply to this prerequisite. 'Bean plantation', 'pasture', 'irrigate', and possibly 'stone railing' seem to be inadvertent, possibly dictionary derived, mistranslations from Spanish to English, but each carries a connotation of a higher level of cultural sophistication than befits the early Olmecs. The use of 'to load a gun' might fit synchronic reflexes from which PZ **maʔk* is derived, but there might well have been no Conquest had that gloss been accurate for PZ speakers. Spanish *armar* also means 'set a trap' which Wichmann includes, and more generally means 'assemble', according to Campbell. The others are reasonable glosses only in the broadest sense by equating modern usages as generic, as in 'cut (as one would) with scissors' or perhaps 'cut fiber/thread' since scissors were another European import, and 'instrument for writing' in the sense of 'stylus, or brush'. This broad sense can be misleading to those who are relying on the linguistic reconstruction as another basis for verification of hypotheses based on non-linguistic evidence.

[5] Alternate or conflicting glosses are as follows: [ ] from Campbell, < > glosses from synchronic languages, { } from Schoenhals.

Wichmann gloss	*Alternate gloss*	*Proto-Reflex*	*PLang*
bean plantation	[bean field]	*sihk-kama	PM
cigarette	(thing to be smoked: from deconstruction of proto-reflex)	*huk?-I	PMZ
to cut with scissors	<cut as with scissors / cut fibrous material>	*me?ps	PMZ
to hobble	<to button, to close: Sp. glosses>	*mo?ks	PMZ
instrument for writing	{instrument for drawing/painting}	*hay?kuy	PMZ
to load a gun, set a trap	[assemble, set a trap]	*ma?k	PZ
paper	(material for drawing upon) <*amate* bark>	*noki	PMZ
pasture, grass	grass, [long grass used in construction]	*mu?k	PZ
shirt	<cape: based on Lowe>	*suy-i	PMZ
to sprinkle, to spread out, to irrigate	<turn upside down, pour, to water: Spanish glosses>	*muc	PMZ
stone railing	<parapet, dam, dike: Spanish glosses per dictionary>	*me(?)ke	PMZ
iron, metal	[hard metal (not gold)]	*ti?ŋ-kuy	PZ
to write	(draw)	*ha:y?	PMZ

Table 13: Semantic/anachronistic interpretations

4. Conclusion.

Campbell & Kaufman wrote, "If the MZ-Olmec hypothesis is true, then this linguistic evidence confirms the archaeological evidence of these (reconstructed etyma)." The converse must also be considered in the reconstruction of a language. In this case, the great majority of the archaeological evidence, with the few aforementioned exceptions, supports both Wichmann's linguistic reconstruction and the hypothesis made by Campbell & Kaufman. We have seen how consideration of the history and the ethnology of a culture are important factors in the accuracy of a linguistic reconstruction, enabling the linguist not only to avoid anachronisms and semantic misinterpretations, but to provide evidence about the time frame in which the language stage existed. Further, the problem of possible mistranslation inherent in the use of a large collection of data from a number of sources has shown the necessity for independent review and verification of glosses by fluent speakers of intermediary eliciting languages. By making maximal use of these kinds of extralinguistic information sources, we can ensure the accuracy, efficacy, and extralinguistic value of linguistic reconstruction.

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